FIG. 1

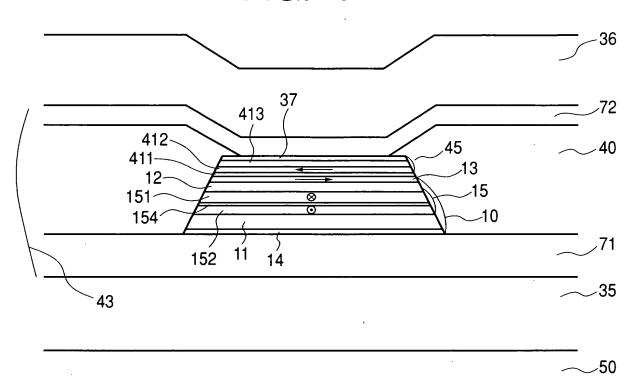
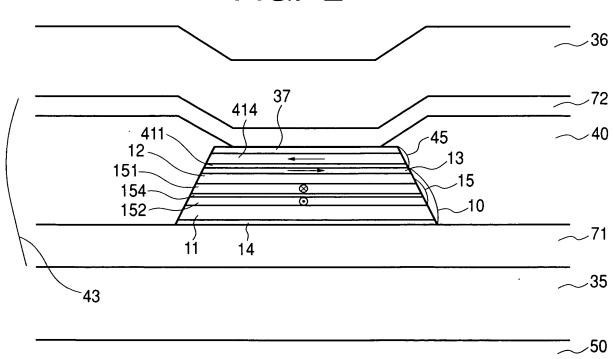


FIG. 2



2/15

FIG. 3

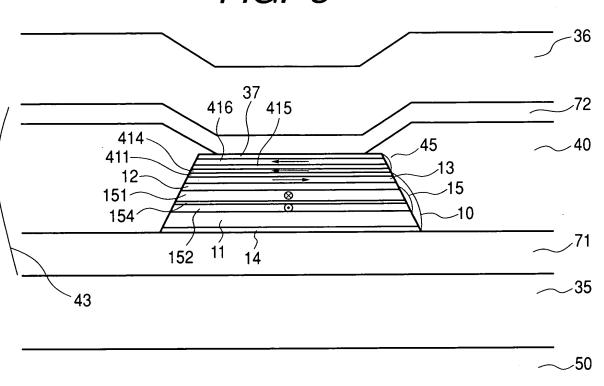


FIG. 4

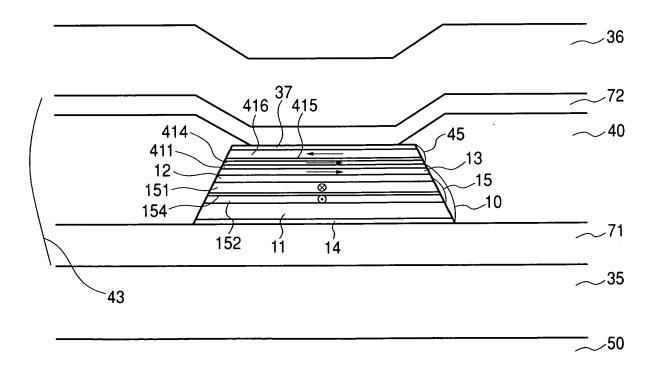


FIG. 5

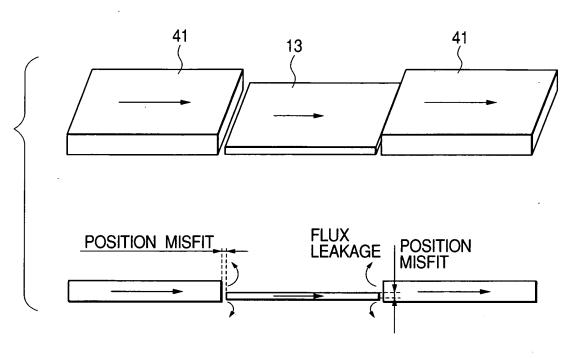


FIG. 6

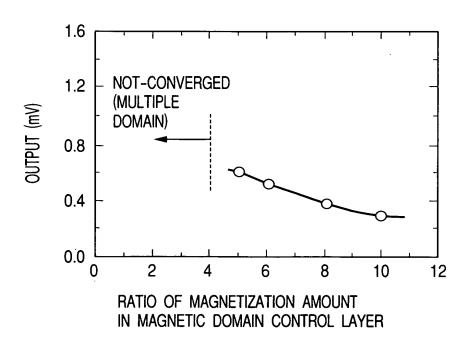


FIG. 7

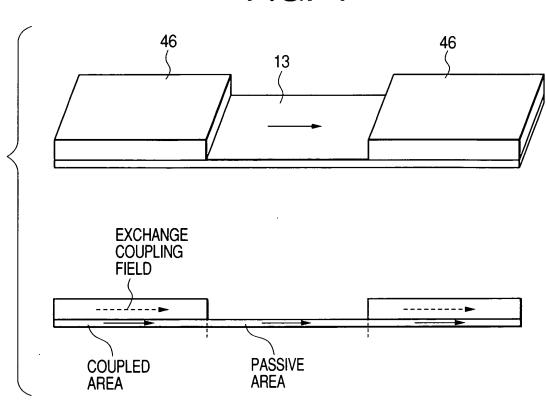
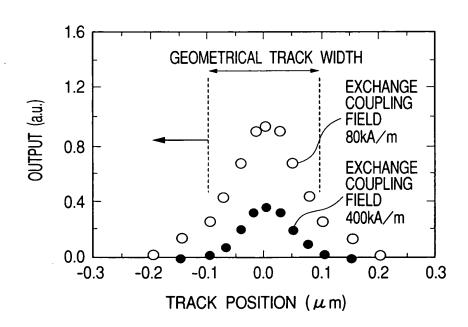


FIG. 8



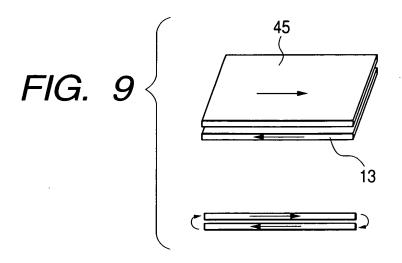


FIG. 10

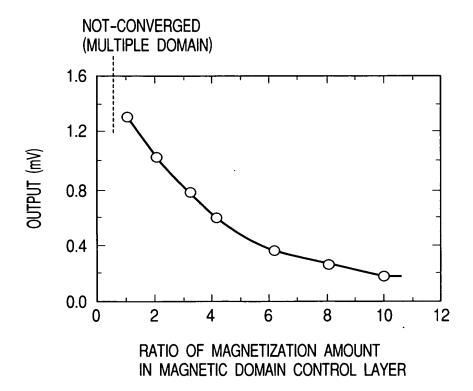


FIG. 11

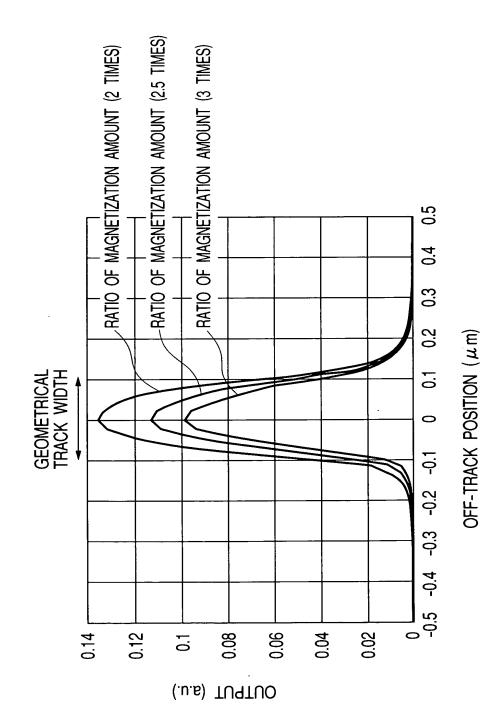
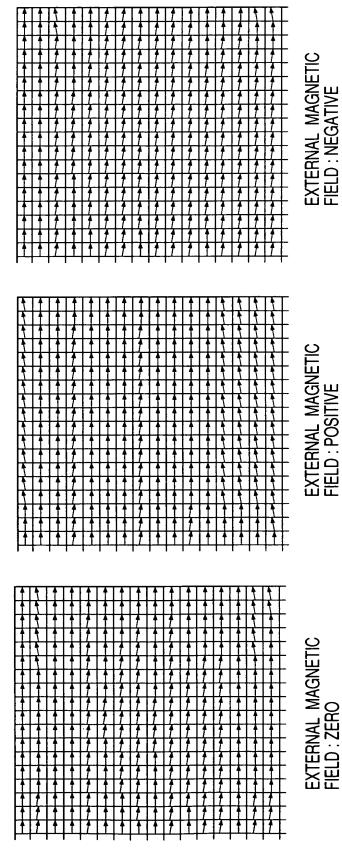


FIG. 12

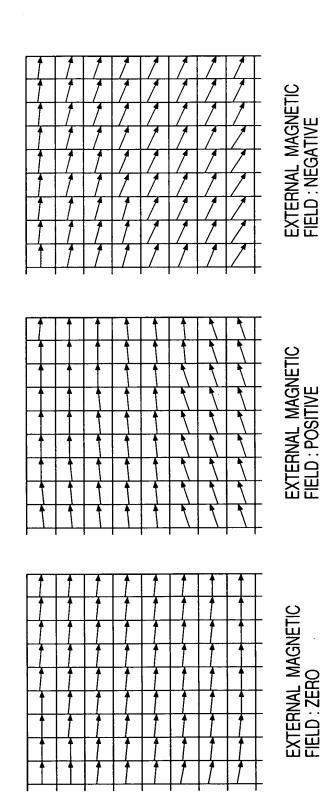


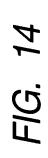
EXTERNAL MAGNETIC FIELD: POSITIVE

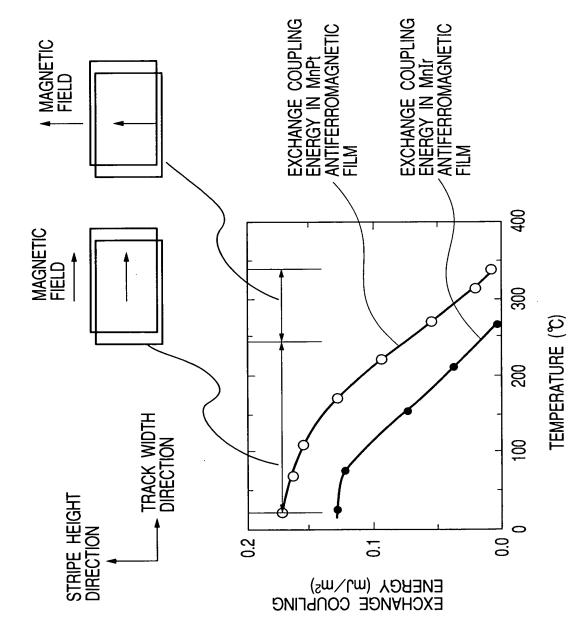
EXTERNAL MAGNETIC FIELD: NEGATIVE

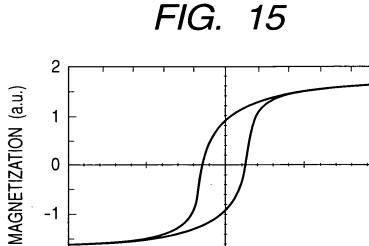
MAGNETIZATION DISTRIBUTION IN HARD-BIAS FILM

FIG. 13









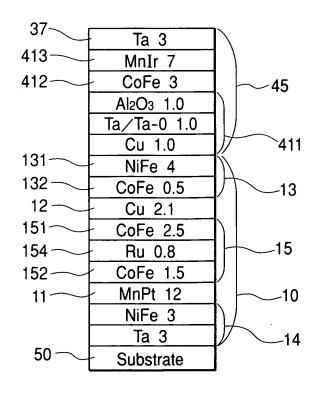
-1

-2 <u></u> -400

MAGNETIC FIELD (kA/m)

400

FIG. 16



11 / 15

FIG. 17

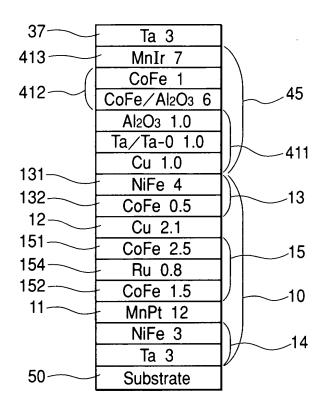
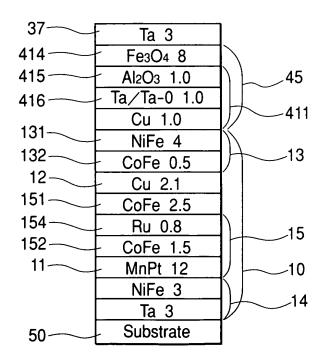


FIG. 18



## FIG. 19

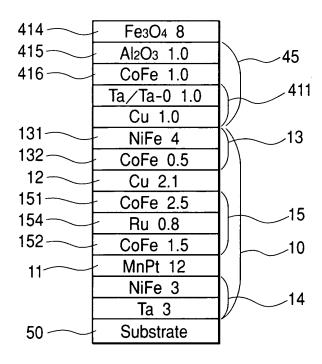
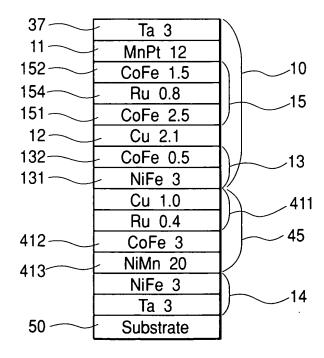
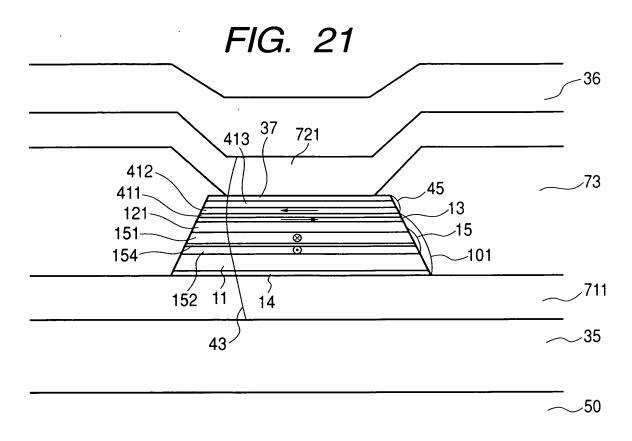


FIG. 20



13 / 15



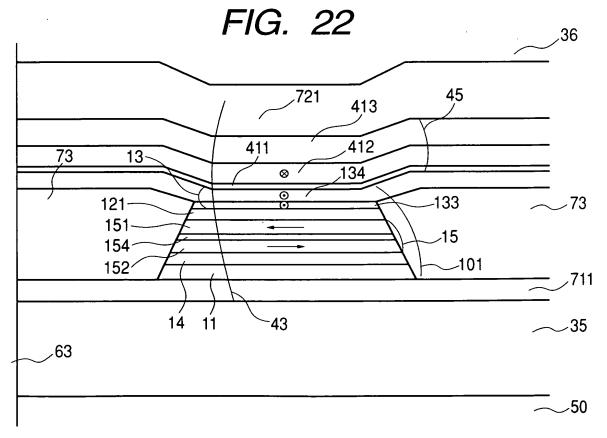


FIG. 23

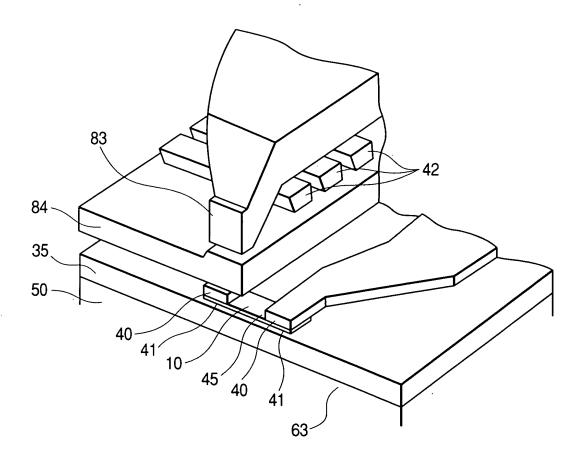
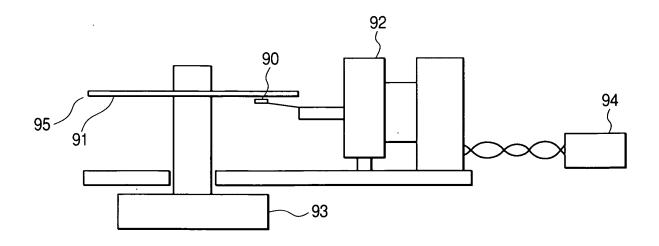
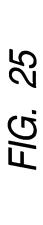
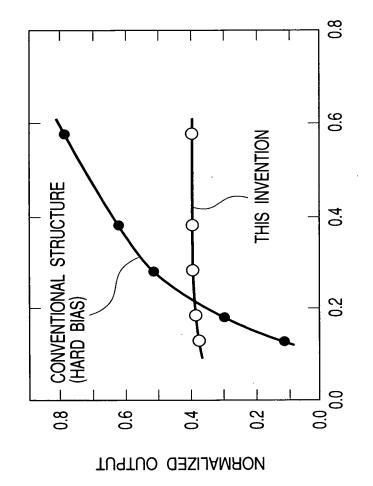


FIG. 24







READ TRACK WIDTH ( $\mu$ m)